Institutional drivers of environmental management accounting adoption in public sector water organisations

Dr. Mohammad Imtiaz Ferdous
Lecturer in Accounting
Cambridge International College
422 Little Collins Street, Melbourne
VIC-3000, Australia.
E-mail: mohammad.ferdous@cambridgecollege.com.au
T+61401740212

Professor Carol A Adams
Professor of Accounting
Durham University Business School,
Mill Hill Lane, Durham, DH1 3LB
t: +44 (0) 191 3345425
f: +44 (0) 191 3345201
E-mail: carol.adams@durham.ac.uk

Dr. Gordon Boyce
Associate Professor, Department of Accounting
La Trobe Business School
La Trobe University
Bundoora VIC 3086 Australia
E-mail: G.Boyce@latrobe.edu.au
T: +61 3 9479 6668
F: +61 3 9479 2356

Institutional drivers of environmental management accounting adoption in public sector water organisations

Abstract

Purpose – The paper examines the influences on adoption of environmental management accounting (EMA) in corporatised water supply organisations, from an institutional theory perspective, drawing on concepts of reflexive isomorphism and institutional logics.

Design/methodology/approach – The primary research involves case analysis of three companies in the Australian water supply industry, drawing on interviews, internal documents and publicly available documents, including annual reports.

Findings – Two key drivers for the adoption and emergence of EMA are: the emergence of a government regulator in the form of the Essential Services Commission (ESC); and community expectations with regard to environmental performance and disclosure. The water organisations were found to be reflexively isomorphic, while seeking to align their commercial logic to 'sustainability' and 'ensuring community expectations' logics to legitimate adoption of EMA.

Originality/value – The paper contributes to the literature by providing case study evidence of the intentions and motivations of management in adopting EMA, and the nature of that adoption process over an extended period. Further, it provides empirical evidence of the applicability of reflexive isomorphism in the context of EMA and institutional logics.

Keywords – Environmental management accounting, water supply organisations, institutional theory, stakeholders, reflexive isomorphism, institutional logics

Paper type – Research paper

1. Introduction

The emergence and development of environmental management accounting (EMA) in recent years has provided new approaches and tools for organisational management to track environmental performance. However, Gibassier and Alcouffe (2018, p.1) concluded that "we still do not fully understand the potential contribution of environmental management accounting (EMA) to a transition toward sustainability". EMA systems may give visibility to environmental aspects of organisational activity that are otherwise often unclear in conventional management accounting systems (Burritt *et al*., 2002). The use of EMA may also assist environmental performance improvement, particularly in relation to carbon emissions management and energy consumption (Hörisch *et al*., 2015; Qian *et al.,* 2018; Qian and Schaltegger, 2017). It may also enhance accountability for organisational environmental impacts (Schaltegger and Burritt, 2000). However, there is conflicting evidence from prior research relating to the outcomes and extended use of EMA with respect to environmental performance (see Christ *et al.,* 2016; Hart and Ahuja, 1996; Phan *et al.,* 2017). This suggests that reasons other than environmental performance improvement may drive EMA adoption.

Economic, technical, socio-cultural, socio-economic, or political rationales may underpin the organisational implementation of EMA. While multiple rationales may be drawn upon, prior research suggests that the most influential tends to be a desire to ensure economic efficiency (Herzing *et al.,* 2012). It has also been suggested that environmental accounting in general, and EMA in particular, can simultaneously play a role in improving environmental performance, environmental sustainability, and economic success (Ferreira *et al.*, 2010). Additional drivers of EMA adoption have been found to include: regulatory influences (Kokubu and Nakajima, 2004); striving for legitimacy (Schaltegger and Hörisch, 2017); instigating organisational change for minimizing corporate environmental impacts (Larrinaga-Gonzalez *et al.,* 2001); supporting environmental management (Burritt *et al.,* 2002); and enhancing organisational eco-efficiency (Burnett and Hansen, 2008). Further, EMA systems can be used to activate the convergence of diverse environmental performance management systems within organisations, and to articulate internal performance management to external reporting (Burritt, 2012; Gibassier and Schaltegger, 2015).

The very limited prior research in the area focuses on describing the current state of implementation and highlighting contrasting outcomes relating to institutional and organisational structural elements that support or impede EMA adoption (Ferreira *et al.*, 2010; Qian *et al.*, 2011; Christ, 2014). In contrast, recent management accounting literature has addressed the contribution of the broader field of management accounting to handling institutional changes and pressures. For example, the adoption of new management accounting innovations enables organisations to deal with institutional pressures through negotiating multiple and conflicting objectives and adopting appropriate institutional logics from the organisational field (Gibassier, 2017; Järvinen, 2016). Institutional logics comprise formal and informal rules of action and interactions along with interpretations that guide and constrain decision makers (Thornton and Ocasio, 1999) to obtain legitimacy (Friedland, 2012) within fields of activity. The use of management accounting tools, particularly management control systems (MCS), helps organisations to strategically respond to

institutional pressures for sustainability (Norris and O'Dwyer, 2004; Tucker and Parker, 2015; Wijethilake *et al.*, 2017).

EMA research also has the potential to identify contingent and institutional factors for its adoption (Qian *et al*., 2011; Christ, 2014); however, empirical research has not investigated the *interaction* of these factors in practice. Christ (2014) called for further case studies identifying potential drivers of EMA adoption in the water supply industry. Existing EMA research is predominantly based on normative arguments (see Parker, 2005) and social system-based theories (Qian *et al*., 2011), which do not provide a theoretical explanation of the potential interactions of the significant drivers of EMA.

The paper provides case study evidence of the interaction of potential drivers of EMA adoption. To date, there has been limited research into the environmental accounting practices of public water organisations (but see Burritt, 2004; Cashman and Lewis, 2007; Moore, 2008, Egan, 2014, for example, in relation to the adoption of EMA more broadly – typically in the context of various forms of environmental *reporting*). Recent literature on institutional change in the water sector, particularly in Australia, examines institutional dynamics and associated changes in practice (Brodnik *et al.,* 2017). This work explains the mutual shaping of technology, actors and institutions (Fuenfschilling and Truffer, 2016), highlighting "the importance of using a diverse range of institutional change mechanisms in a mutually reinforcing way to provide a strong foundation for change" (Werbeloff *et al.,* 2017, p.5845). Research in this domain can further our understanding of "the paradigmatic core of a sector, which results from the co-evolution of institutions and technologies over time" (Fuenfschilling and Truffer, 2014, p. 772). Broadly, the present paper responds to the call for management accounting research that examines "how a business organisation can organise and imagine its control system outside of its legal entity that is how can it lead and incentivise suppliers, customers and competitors to achieve sustainability" (Gibassier and Alcouffe, 2018, p.13).

Since the 1990s, a series of governance, management, and related institutional arrangements have interacted with the implementation of various aspects of environmentally sustainable development in the Australian water industry (McKay, 2006). The evolution of practice change and 'sustainability transition' in this sector (Brodnik *et al.,* 2017; Werbeloff *et al*., 2017) shows a strong focus on dialogue with the community (Fuenfschilling and Truffer, 2014), which makes an examination of this setting especially interesting.

Our research aims to address the domain identified above by examining the forces driving public water organisations to adopt EMA, and the interaction of the forces in the institutional field. We utilise reflexive isomorphism and institutional logics as complementary perspectives. The analysis draws on in-depth interviews with key organisational personnel, supplemented and extended by examination of the link between EMA adoption and EMA annual report disclosures.

The key contributions of the paper are three-fold. First, the paper contributes to an understanding of institutional pressures with regard to the adoption of EMA. Second, Nicholls' (2010) fourth type of isomorphic pressure, reflexive isomorphism, which has been

identified as the process of paradigm building in social entrepreneurship, is empirically tested in the context of EMA adoption. Third, this paper contributes to the institutional logics literature, explaining how the logics of individual constituents may align with that of a dominant stakeholder; thus advancing empirical understanding of the interactions of multiple logics in the context of environmental accounting (see Narayanan and Adams, 2017).

2. Theoretical perspectives: Institutions, reflexive isomorphism and institutional logics

Contemporary institutional theory, or new institutionalism[1], provides a particularly useful frame within which to examine the motivations and drivers that impel organisations to adopt EMA. It emphasises how the organisational need for both survival and legitimacy produces conformity with prevailing (institutionalised) practices and procedures, regardless of their efficacy or rationality in the organisational context (Meyer and Rowan, 1977). Institutional theory emphasises how such conformity may lead to "increased stability, legitimacy, and access to resources" (Ball and Craig, 2010, p. 283).

By emphasising organisational ties to context, and the need for organisational accommodation to the environment, the institutional approach provides an alternative perspective to approaches that assume organisational action and success is a direct product of efficient control and direction. Thus, action may be *shaped* and/or *constrained* by the environment in which an organisation operates, and adaptation to the organisational environment may produce legitimacy, particularly amongst key stakeholder groups. This gives organisations access to both needed resources and socially desired approval – both of which are key to organisational survival. These insights from institutional theory "are, in general terms, applicable to all organizations because all are embedded (to greater or lesser degrees) in their environments" (Zhang *et al.*, 2014, p. 821).

We draw on Scott's (2008, p. 48) outline of an approach to institutional analysis that examines "regulative, normative and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life". Through the formal or informal laws and rules, the *regulative* pillar plays a stabilising role that operates primarily through coercive mechanisms and sanctions for non-compliance, providing a formal legal basis of legitimacy. The *normative* pillar provides a moral basis of legitimacy that relates to established values and norms that shape ends and means that are regarded as desirable and are therefore reinforced through social processes. The *cultural-cognitive pillar* provides culturally supported and shared conceptions that provide orthodox meanings through which the world is interpreted and reproduced through mimicry and imitation.

Institutional theory also provides "a productive frame within which to examine stability and change within organisations and systems and their relationship to broader social systems" (Zhang *et al.*, 2014, p. 821). By considering how organisations may be subject to influences from each institutional pillar, this approach draws analytical attention to the coercive, normative and mimetic isomorphic pressures (or influences) on organisations in context. As Scott (2008, p. 85) points out, organisations ''are penetrated by environments'' such that institutional supports and constraints actually operate *within* organisational boundaries.

Institutional research has provided an important counterpoint to functionalist studies that focus on the rational economic direction and control of organisations, but many studies have focused primarily on mimetic and normative processes (and, more recently, on the work of institutional entrepreneurs), whilst often marginalising attention to coercive forces (Clegg, 2010). Because power, including the power of the state, is central to understanding society, the neglect of power in many studies leaves them lacking in terms of reference to how the "the wider social fabric" (Clegg, 2010, p. 5) influences change (see, also, Dillard *et al*., 2004; Lounsbury, 2008; Zhang *et al.,* 2014). Therefore, the present study is particularly attentive to how power, particularly state power, influences EMA adoption in water organisations[2].

Thornton and Ocasio (1999) define institutional logics "as the socially constructed, historical pattern of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality" (p. 804). Institutional logics enable and constrain social action and prescribe practices, which leads to organisational legitimacy because institutional logics and organisational interests and power are interdependent (Thornton *et al.*, 2012). Institutional logics offer ways to deploy organisational action to enable an organisation to explore and then legitimate new practices (Thornton *et al*., 2012). Hence, considering institutional logics is particularly apposite in the exploration of organisational behaviour to legitimate actions in the EMA field.

The institutional logics approach has been frequently used in accounting research (see Lounsbury, 2008; Lander, Koene and Linssen, 2013), however, it has been less frequently used in an environmental accounting context (for exceptions, see: Larrinaga-Gonzelez and Perez-Chamorro, 2008; Lauesen, 2014). Theoretical explanations applying the notion of institutional logics to EMA adoption are scarce (Lansiluoto, 2016). However, there is a nascent understanding that institutional logics can transform public water service companies' "implicit" CSR, moving towards "explicit" CSR through isomorphic pressures (Lauesen, 2014). Environmental performance indicators used in water organisations tend to be legislation-driven rather than being adopted to improve environmental performance (Johnston and Smith, 2001). Hence, water service organisations may be expected to seek to legitimate their action in relation to legislative requirements through reflecting institutional logics.

In investigating the interaction of organisational processes with factors that influence their actions in relation to institutional requirements, we also consider how organizations in emergent fields may seek to reflexively shape the emerging logics of the field. Reflexive isomorphism, which "identifies a reflexive relationship between field and organisational-level legitimation strategies … is particularly appropriate to emergent fields" (Nicholls, 2010, p. 612). We consider how reflexive isomorphism works in the context of regulative, normative and cultural-cognitive institutional logics that may influence the organisation. Reflexive isomorphism is a particular legitimating strategy "in which organizations actively engage in processes that align field-level and internal logic to shape emergent institutional fields as closed systems of self-legitimation" (Nicholls, 2010, p. 617). Thus, influential organisations may *shape* the legitimacy of an emerging field. The operation of EMA in the context of increasing concerns about sustainability represents such an emergent field (Gibassier and Alcouffe, 2018; Christ *et al.,* 2016; Schaltegger and Burritt, 2000). In this

context, practices and processes in influential organisations have the potential to shape the further development of the field (Christ, 2014).

In summary, traditional approaches to isomorphism examine how exposure to institutional pressures may cause organisations to become isomorphic in a given organisational field (DiMaggio and Powell, 1983). Consideration of reflexive isomorphism extends the examination to consider whether and how organisations actively engage in *shaping* the legitimacy of the field "to reflect their own institutional logics and norms" (Nicholls, 2010, p. 617).

The close relationship between EMA and environmental performance improvement provides support for an initial premise in this study that regulatory (coercive) pressures to improve the environmental performance of water supply organisations are likely to present a key impetus for water supply organisations to adopt EMA. *Prima facie*, therefore, it is expected that water authorities are likely to conform to formal mechanisms imposed by government in order to survive or grow, as argued by DiMaggio and Powell (1983), and legitimate their EMA adoption through the process of reflecting relevant institutional logics. Further, consistent with the notion of reflexive isomorphism, water authorities may seek to align internal and field logics in a self-legitimating way.

3. Research approach and method

A qualitative case study research approach with multiple sources and analytical techniques was adopted in this research.

3.1 Case studies

Case studies were conducted on three government-owned organisations operating in the Victorian water supply industry – known, for the purposes of this study by the pseudonyms 'Pacific Water', 'Atlantic Water' and 'Central Water'. Pacific Water is a regional urban (non-metropolitan) water supply organisation; Atlantic Water is a regional water supply organisation providing services to cities, towns, and villages in its area of responsibility; and Central Water serves retail water businesses engaged in metropolitan water supply. Table 1 provides an indication of the size and significance of the three case organisations. Pacific Water and Atlantic Water approximate the average size of Victorian water organisations, whereas Central Water is larger than average.

<Insert Table 1 about here>

Each of the case study organisations was sent a brief introduction to the project by email, explaining the main aims of the investigation, the possible involvement of organisational personnel, and the research methods to be adopted. The email was sent to top executives who had a role in environmental and sustainability practices; for example, the general manager (GM) for sustainability, or the GM for environment. The definition of EMA adopted and the requirements of participants were clearly articulated, as was a guarantee of confidentiality.

For each of the case organisations, the research method included interviews with key personnel, conducted between December 2009 and July 2010. This was supplemented by

analysis of selected key company documents and publicly available reports over a ten year period (2001–2010) for each organisation. This period was selected as appropriate for the study because during 2003–2009 the State of Victoria was in prolonged drought and water organisations were facing uncertain, and (in recent times) unprecedented circumstances. Hence, the data from this period was expected to be particularly suitable to reflect how organisations legitimate EMA adoption through the process of reflecting relevant institutional logics in an environment of uncertainty.

3.2 Data sources and research methods

3.2.1 Interviews

The main source of case data was a series of 24 interviews with key organisational actors in the three case study organisations (see Table 2).

<Insert Table 2 about here>

Semi-structured interview questions were developed, based on the theoretical perspectives outlined above. This included a series of open-ended questions that articulated the expectations of the study. The interviews each lasted around one hour and were conducted in the interviewees' workplace. All interviews were tape-recorded and transcribed, except one, for which detailed notes were taken.

3.2.2 Publicly-available documents and reports

Various publicly available reports, including Annual Reports (which include environmental data for the Australian water sector) and other documents, such as environmental reports, sustainability reports, and water quality reports were examined in order to provide further background information and identify EMA initiatives and drivers.

In order to examine the potential link between EMA adoption and annual report disclosure trends, EMA information and environmental performance disclosure in annual reports of the case organisations was analysed. This approach was appropriate to the achievement of the research objectives, because past research has shown that environmental disclosure in annual reports is significantly correlated with the development of internal environmental management practices (Frost and Seamer, 2002). Therefore, environmental performance disclosures may be closely associated with the development of a system that collects and disseminates information about the environmental aspects of corporate activities (that is, EMA), rather than straightforwardly or simply reflecting environmental performance.

3.3. Analytical procedures

3.3.1 Interview analysis

To analyse the empirical data, several first level codes were derived from the theoretical framework and categorised according to research theme. For construct validity, first level codes were defined based on the closest concept the code carried. Coercive pressure, for example, was defined as capture of obligatory requirements of the organisation that have some role in EMA adoption. This approach enabled consistent application by the researchers. Once the first level codes were identified, each transcript was read and re-read

several times in order to identify text (sentences, paragraphs, phrases) connected to specific first level codes (Miles and Huberman, 1994). 'Chunks' of text related to coercive pressures, for example, were collected from all transcripts and clustered under the 'coercive pressure' code.

The NVivo qualitative research software package was used to assist in coding, identifying emergent pattern codes, and managing interview transcripts. Summarised data was organised under first level codes, facilitating the development of new nested lower-level codes, movement of coding data, and organisation of codes. Pattern codes were created and named to represent the meaning of new patterns identified.

3.3.2 Content analysis

Increasing amounts of environmental and social reporting in the Australian public sector "address in-house organisational requirements" (McDonald-Kerr, 2017, p. 49). Christ and Burritt (2017) argued that for efficient water management, organisations must improve their internal management systems, "which then filters through to external reporting" (p. 228) (see also Christ, 2014). Accordingly, in this research, annual report content analysis was used to identify general trends in disclosure in relation to EMA adoption, but, more importantly, to portray an overall sense of how the case organisations were reporting EMA-related activity. This analysis focused on the presence or absence of disclosure about identified EMA and corporate environmental performance items (rather than on the level of reported environmental performance itself). A dichotomous variable was used: if *any* disclosure occurred in relation to any of the items in a given year, a score of '1' was given, otherwise '0' (see Haque and Deegan, 2010)[3].

Prior research has found a growing trend for organisations to include both physical and monetary EMA information in external reports (Burritt *et al.*, 2002). Physical environmental information relates to organisational impacts on environmental systems, including "all past, present and future material and energy amounts that have an impact on ecological systems", expressed in physical units such as weight and energy. Monetary environmental information concerns the economic consequences of environmentally related impacts on the companies, including "past, present and future financial stocks and flows", expressed in financial terms (Burritt *et al*., 2002, p.41).

In determining the list of disclosure categories for *physical or monetary EMA* information, we drew on a number of relevant previous studies (Bartolomeo *et al*., 2000; Burritt *et al.*, 2002; Schaltegger and Burritt, 2000; Qian *et al.*, 2011) and definitions of EMA (Burritt *et al.*, 2002). Five broad categories were identified, of which four contained both physical and monetary information:

1. Product output (physical and monetary);
2. Non-product output (physical and monetary);
3. Waste flows (physical and monetary);
4. Indirect costs (monetary); and
5. Externalities (physical and monetary).

In relation to types of environmental performance disclosure, the measurement models of Ilinitch *et al*., (1998) and Xie and Hayase (2007) were adapted, standardised and aggregated, and supported by other available environmental performance indicators, codes of practice, and environmental performance reporting guidelines. Based on these sources, organisational environmental performance disclosure was categorised under four perspectives:

1. Organisational system development;
2. Stakeholder relations;
3. Strategic; and
4. Input–output.

In the latter stages of the study, the interview data also guided this process. A limited number of environmental performance disclosure items were added to the content analysis variables after commencement of the process of reviewing and coding disclosures from the annual reports. A final list of 23 environmental performance disclosure items was developed under the four perspectives.

4. Case analysis findings

4.1 Annual report disclosures

This section analyses patterns of EMA information and environmental performance disclosure by the three case organisations for a period of 10 years (2001–2010). The purpose of this analysis is to support the discussion of the interview data in conjunction with disclosure patterns. Tables 3–5 present the results, summarising EMA information disclosure under each of the categories outlined in section 3.3.2.

<Insert Table 3 about here>

Table 3 shows an overall increase in *physical* EMA information disclosures. The lowest levels of physical EMA disclosure for all three case organisations were in 2001, with scores of 0, 2, and 2; whereas the highest levels of disclosure were in 2008 (9 – Pacific Water), 2004 and 2006 (8 – Atlantic Water) and 2007 and 2010 (6 – Central Water).

<Insert Table 4 about here>

Table 4 shows that across the three cases, only 9 out of a possible 21 items of *monetary* EMA information were disclosed. Only one of these 9 items was disclosed prior to the mid-2000s, after which time disclosures increased with the inclusion of several new items of monetary EMA information in the 'product output', 'waste flows' and 'externalities' categories. Hence, an increase in the monetary EMA information disclosure was evident across the period.

<Insert Table 5 about here>

As can be seen in Table 5, Pacific Water began disclosing environmental performance from an organisational system development perspective from 2004. Atlantic Water and Central Water had begun disclosing some items under this perspective in the earlier period, but there was inconsistent disclosure. Two of the three case organisations did not disclose any

items categorised as‘strategic’ until 2004, and the third (Central Water) disclosed only two items before this period. Pacific Water disclosed only one item out of 8 under the input–output perspective before 2004, compared with 4 items for Atlantic Water and 3 items for Central Water. Although more items from the stakeholder perspective appeared to be reported during the earlier period, there were still a greater number of disclosures in the later periods.

The trends in EMA information disclosures and environmental performance disclosures are presented in Figure 1, which highlights the upward trend in both these disclosure types across time. Disclosure in these areas developed momentum in the case organisations in the mid-2000s.

<Insert Figure 1 about here>

In conclusion, the case organisations disclosed more EMA information and environmental performance items in later years. Implications of these disclosure patterns are discussed in conjunction with analysis of the interview data in section 5.

4.2 Pacific Water

Pacific Water is a regional urban (non-metropolitan) water corporation that is managed like a private business and is funded primarily by customers. The Annual Report corporate financial statement for the financial year 2009–10 showed that Pacific Water received about $60 million in tariffs and charges from customers, $36 million from borrowings, and $0.7 million from capital contributed by the State Government. These sources of funding set the scene for a prevailing commercial logic in Pacific Water, with customers clearly representing an important stakeholder group, with government also having an influential role through ownership and the power of law.

During the period of this research, Pacific Water was under a formal contract known as a ‘Statement of Obligation’ (SOO) with the government’s Department of Sustainability and Environment (DSE). The SOO set out strategies for the corporation, including its primary objectives and reflected the DSE’s concerns about environmental protection:

> Within that Statement of Obligation it [SOO] talks about sustainability, reducing greenhouse gas, biodiversity all those things. (GM Sustainability)

The SOO required the environmental measurement and analysis, and consequently acted as a driving force for Pacific Water to adopt EMA:

> So at a strategic level it [SOO] is driving our business to monitor data, set targets… [so] the Statement of Obligations require[s] us records, [and] measurement [of] data; because without that you can’t meet that strategic position of the government driving us into sustainability, reduce greenhouse gas. (GM Sustainability)[4]

Hence, formal pressure for environmental improvement was exerted from the DSE, which had authoritative power over Pacific Water through the SOO. Sustainability dimensions in the SOO, such as water conservation and reduction of greenhouse gas emissions,

necessitated that the organisation measure and analyse the environmental aspects of its operations to improve environmental performance. Our analysis suggests that strategic decision making in Pacific Water was moderated to reflect the field-level sustainability logic (Thornton and Ocasio, 1999). For example, recording and analysis of the nutrients in recycled water and matching them with customer needs helped Pacific Water to decide which nutrients to remove in the recycling process, resulting in minimisation of emissions for Pacific Water (and reduced electricity expense). This reflects a process of isomorphism in that Pacific Water adapted to the wider sustainability logic of the field through its organisational strategic decision-making process (see Nicholls, 2010).

Like the SOO, the Environment Protection Authority (EPA) licence of Pacific Water represented an obligatory requirement for the organisation, permitting it to operate. This requirement was a driving force for the organisation to generate and analyse environmental information, because without this information it would be impossible to *control* the relevant related business activities:

> They [the EPA] do have a direct influence because the legal requirements are very powerful. So if you don't do the right thing they [the EPA] can penalise, and also you can create a negative public image if you get prosecuted or get a fine…the regulators can come and take a sample any time of the day. So in order to make sure that you are not caught you have to proactively manage environment taking the environmental management accounting. (Senior Environmental Engineer)

The EPA thus exerted direct compliance pressures, through licensing, requiring the organisation to monitor and improve its own environmental performance and providing general impetus for considering environmental impacts.

Just as established authorities may have direct ongoing influence over an organisation, a change in the regulatory framework under which public sector organisations operate could also present an impetus for EMA adoption. The interviews revealed such a case in Pacific Water, in the form of the emergence of the State Essential Services Commission (ESC), commencing operations on 1 January 2002, as an independent economic regulator of essential utility services in electricity, gas, ports, and rail freight, extended in January 2004 to include water and sewerage services. Every Victorian water organisation is required to report to the ESC against 67 specified key performance indicators. The information provided to the ESC is audited to check for reliability. The ESC monitors and publicly reports on the comparative performance of Victorian water businesses to facilitate "competition by comparison" among the water companies (Manager Assets).

The Board of Pacific Water wanted to be ranked in the top five 5 performers. Thus motivated, several actions were taken in relation to several environmental KPIs (such as emission reductions and increase in recycled water usage), for example, accounting for recycled water (Managing Director, MD)). Therefore, the ESC-mandated comparative performance report provided an impetus for improving performance through EMA adoption.

Regulatory instruments designed to protect the interests of customers could produce adverse impacts on the company if customers are not satisfied, which would imply an institutional logic of ensuring community expectations. Hence, in addition to government,

customers are key stakeholders as they possess all three vital stakeholder attributes (power, legitimacy and urgency) that lead firms to exert more effort in managing the stakeholder relationship (Mitchell *et al*., 1997; Kamal *et al*., 2015). Pacific Water utilised several mechanisms to remain cognisant of customer perspectives, including customer contact centres, annual surveys, community reference groups, and a customer advisory group. From these inputs, an annual report was produced, including information about customer environmental expectations as well as their understandings of the organisation's environmental initiatives, such as awareness of water restrictions. This information would be fed-back into operational and strategic decision making. This activity shows how the 'ensuring community expectations' institutional logic was adopted and adapted in a reflexively isomorphic way, in that Pacific Water projected its own initiatives and activities into the field, which then became, at least in part, a measure of legitimacy and standard by which they judged their own performance.

Many interviewees referred to the feedback from customers through the three customer reference groups in different locations in the region, as well as from the annual customer survey and monthly surveys. For example:

> … what comes out of the… [customer feedback] is our very early adoption of things - like our very early adoption of greenhouse strategy. We are the first water corporation [preparing] the greenhouse strategy. We got that because we get that information coming in from our customers. (GM Commercial Services)

> So they [community] have an expectation that we don't spill sewage down the stream, they have an expectation that we manage our scarce water carefully. We don't let a burst water main go for hour after hour after hour. So my personal view is the man in the street has an expectation, and those expectations tend to drive the regulators, you know, 'what's a reasonable position in terms of meeting our obligation and then setting targets, which continuously improve?'. (GM Sustainability)

> It's [accounting for recycled water] also driving the fact that we are a strong environmental performer. (MD)

The above quotes reflect Pacific Water engagement in certain processes, such as minimising electricity and water wastage, which reflect its commercial logic. Key elements of this logic and its playing out in these processes, would be projected into the institutional field via customer engagement and related activities. This demonstrates reflexive isomorphism, which is reinforced when Pacific Water defines and explains its own efforts in this realm as being 'in line with community expectations'. This process indicates a tendency to *align* a commercial logic with a community expectations logic that is, itself, shaped by governmental and regulatory influences, thus legitimising its EMA adoption.

The annual report content analysis (see Table 5) supports the above finding. The decade-long drought, which became severe in the mid-2000s, drove the business to begin potable water substitution. Although there was no regulatory performance requirement for this, Pacific Water was active in this area to ensure supply security with its very low level of water storage. The organisation disclosed potable substitution consistently from 2004, with the aim of communicating with the public that Pacific Water was a strong environmental

performer. Again, this demonstrates reflexive isomorphism within institutional logics that are influenced by stakeholder (customer and government) expectations, even as the latter are themselves influenced by Pacific Water's own engagement with its stakeholders.

The above discussion of the Pacific Water case highlights that the dominant internal logics of government were directed towards ensuring environmental sustainability and meeting community expectations. The government transposed its logic to water supply organisations through the SOO, EPA licence requirements, and reporting requirements to the ESC. However, Pacific Water's dominant internal logic was a commercial logic, with the organisation managed like a private business, even though dealing with public goods. Analysis of the interviews demonstrates that Pacific Water aligned its commercial logic with the institutional logic relating to its customer stakeholders through a differential mechanism: modifying the existing system and adopting a new system *within* it (see e.g. Thornton, 2002; Rautiainen, Urquía-Grande and Muñoz-Colomina, 2017). Thus, Pacific Water responded to different institutional pressures in different ways:

1. To the SOO – by undertaking water conservation measures and reducing greenhouse gas emissions.
2. To the EPA – by adopting the EPA licence requirements.
3. To the ESC – by modifying its existing environmental reports.
4. To government and community expectations – by incorporating community groups in decision-making processes.

The concept of reflexive isomorphism highlights how EMA adoption in Pacific Water was legitimated in the context of SOO requirements, EPA licensing, ESC reporting, adoption of a greenhouse strategy, and incorporation of community groups in its decision-making processes.

Pacific Water also aligned its commercial logic with broader community expectations and sustainability logics of government by incorporating community interests in its commercial activities. For example, during the decade-long drought, Pacific Water initiated potable water substitution to ensure supply security for the community. Hence, broader institutional logics shaped the decision of individual constituents in the organisational field (Pacific Water) to align their own logic to the broader one, in order to make their actions or efforts legitimate (see Ocasio, 1997).

4.3 Atlantic Water

Atlantic Water provides water and sewerage services to 38 cities, towns, and villages in its regional area of operations, serving an estimated population of 113,000 people in an area of approximately 20,000 square kilometres[5]. It is a government-owned corporation, and environmental performance comes under close government scrutiny.

The EPA influences water authorities through the *Environmental Protection Act* 1970 (EPAct). This is a coercive institutional influence that it *requires* Atlantic Water to emphasise the environmental impact of its operations. Additionally, the EPA represented a driving force for Atlantic Water to adopt EMA during the period under examination in the form of

the corporate licence requirement to have an environmental management system (EMS). As a part of an annual compliance statement, Atlantic Water had to report on EMS outcomes.

Responding to these regulatory influences, Atlantic Water partnered with the EPA to develop a new corporate licence, moving beyond compliance aiming to achieve improved sustainability outcomes. This reflected an active engagement by Atlantic with institutional influences in its field. Hence, the existence of the EMS in Atlantic's corporate licence represented a coercive pressure that influenced the adoption of EMA, but the precise manner of the response was shaped by reflexive isomorphism.

Atlantic Water also actively engaged in other ways with EMS-based processes that shaped the legitimacy of EMA adoption within the organisation, whilst reflecting its own commercial logic. For example, the EMS included competency requirements, and Atlantic Water would prepare a competency inventory across its staff. This would then be compared with the regulatory requirements and the strategic goals of the organisation in order to develop training programs. EMA information would feed into the training programs to optimise training goals by identifying environmental problems and means to overcome them. The Chief Financial Officer described the usefulness of EMA for training treatment plant staff whose work revolved around biological process information generated through EMA. This information was used to train staff to optimise plant operations, minimising environmental impact and optimising operational costs. This reflects the interweaving of the sustainability logic with Atlantic's commercial logic.

Under the EPAct, the EPA implements and enforces the *National Pollutant Inventory, National Environment Protection Measure* (NPI NEPM) on behalf of the Victorian Government through the *Industrial Waste Management Policy (National Pollutant Inventory)* (IWMP NPI), which came into operation on 6 October 1998. Under the IWMP NPI, an industry facility must report to the NPI if the emission or transfer-in waste of any of 93 defined substances exceeds the NPI reporting threshold. The NPI NEPM requires reporting of greenhouse gas emissions, and the *National Greenhouse and Energy Reporting* Act 2007 (NGER Act) requires the collection, reporting, and dissemination of information related to greenhouse gas emissions and energy consumption and production.

Thus, the *NGER Act* and the *NPI NEPM* are a direct impetus for the capture, understanding and reporting of NPI substances, including greenhouse gas emissions. Responding to this coercive influence, Atlantic Water reported its greenhouse gas emissions through the NPI:

> …we still report it [Greenhouse data] through the Pollutant Inventory [because]…we do not make that trigger level at the moment [set by the *NGER Act*]" (Manager Sustainability and Environment).

Organisations are likely to become environmentally proactive in considering environmental impacts in corporate activities if there is a perceived environmental concern from customers (Green *et al.,* 1996). Customers' environmental concerns came to the attention of the Atlantic Water during 2003–2009, when the State was in prolonged drought. As was the case with Pacific Water, during this drought there was much interest from Atlantic's customers in accessing re-used (recycled) water.

A key part of the process through which Atlantic Water discerned customer environmental concerns was the engagement of the community in project implementation. The organisation established representative committees in several towns that had been involved in environmental monitoring, which was initially more focused on pumping costs and electricity generation. As a part of its project implementation process, Atlantic Water presented new project proposals to the community and sought feedback, which brought broader customer environmental concerns to attention. Thus, Atlantic actively considered customer concerns and responded to them as a normative institutional influence.

There was also an initiative in Atlantic Water to *influence* customer perceptions of value for money, showing how influences from the normative institutional pillar were blended with reflexive isomorphism. The Manager Sustainability and Environment acknowledged the importance of communication between customers and the organisation when addressing these issues:

> Customers need to understand what we do…[All the business activity] comes with a whole stack of prices and I don't mean just dollar prices, I mean funding the environmental costs as well… If we want to do anything major that will increase the price of water we go back to the ESC. The Essential Services Commission controls what we can and can't charge for water. So if we go back to the Essential Services Commission and say we want to put water up to $5 a kilolitre we better have a very good understanding of our customers' capacity to pay, desire to pay, acceptance of the new product range and to be able to demonstrate material benefit, or they'll just kick it out. And a good example of that is in the last funding period [*other water company in Victoria*] went to the ESC for a hundred percent green power that would've raised water prices to about $3 or $4 a kilolitre. And ESC said no, they said there's no obligation for it and there's no customer desire to have it…So the customer relationship around what we charge for all our initiatives, not just the delivery of water and wastewater services, is very important.

Significantly, this quote shows how normative and reflexive institutional processes were part of Atlantic's engagement with the regulatory sphere of influence. It shows how the playing-out of institutional forces is often activated in a complex web of engagement, rather than in straightforward processes of institutional adaptation.

Community expectations for environmental improvement also provided an important incentive for EMA adoption. Atlantic Water perceived that the adoption of EMA would enhance the credibility of its sustainability initiatives. It was believed that the generation of environmental information and its use in business decisions could convey a message to the community that the organisation is capable of handling environmental uncertainty (see Gray, Owen and Adams, 2009; Gray, Adams and Owen, 2014). Further illustrating the processes of reflexive isomorphism, the Manager Sustainability and Environment stated:

> [Atlantic Water] is recognised for being proactive in this [enhancing credibility] sphere, it's recognised for what it is doing in terms of… carbon accounting, it is recognised as a go-to organisation on issues [of] water, and that has been heightened, I guess, by the climatic experiences we have had in the last five years, but it is recognised that it has the skills and capacity to answer these questions.

Atlantic Water engaged in the Victorian Government community engagement framework for emission reductions and enhancement of renewable energy production by improving understanding of potential impacts of climate change on its water systems. This type of engagement was regarded as enhancing Atlantic Water's credibility:

> We need to have that information so we can be transparent. We're fairly open with our business so most of the information we've got now is just public knowledge, people can get access to it, we put it in annual reports. I'm sure the Board's keen to promote its position as a responsible water authority, so it certainly helps to make … confirm our role in being a sustainable business. (Strategy and Development Manager)

The above findings indicated that the company Board wanted to confirm Atlantic's community role, demonstrating its adherence to expectations for a sustainable water authority. In this respect, the organisation sought to proactively enhance its community credibility regarding the handling of environmental uncertainty, which led it to adopt EMA (Larrinaga-Gonzalez *et al*., 2001). Thus, through its engagement with institutional influences, Atlantic Water also projected its internal legitimating agenda in terms of EMA adoption, including increasing recycled water, funding environmental costs, and improving greenhouse gas performance/footprint. Atlantic Water actively engaged in processes, such as community engagement in project implementation process and attending in community forums, to align with a community expectations logic, while continuing to reflect its own commercial logic (including reducing electricity expense and increasing recycled water revenue).

The reflexive isomorphism perspective highlights how EMA adoption in Atlantic Water was legitimated through its response to the forces emanating from customer and government institutional logics. The specific forces that derived from the sustainability logic of the government included the EPAct environmental protection policies and associated EPA licence, and the NGER Act. Atlantic Water responded to these forces by implementing EMS in its corporate licence and reporting to the NPI. The other forces that derived from the community expectations logic related to satisfying environmental concerns. Atlantic Water responded to this influence by engaging the community in its project implementation processes, particularly those relating to environmental monitoring, community forums, and reporting potential climate change impacts on the water system.

4.4 Central Water

Central Water is not directly involved in providing water and sewerage services to customers in its region; these services are rendered by three retail water companies. Central Water operates and manages 157,000 hectares of protected catchments, 10 water storage reservoirs, approximately 1000 kilometres of water distribution mains, 65 service reservoirs, and 42 water treatment plants. Rainwater is harvested in catchment areas and stored in reservoirs, from where water flows to service reservoirs that provide short-term storage (1–2 days) to ensure constant water supply. From there, water flows through smaller pipe systems to retail water businesses, which then supply water to retail customers. Similarly, sewage is collected from retail customers by the retail water companies and passed through

to Central Water's sewerage system. Central Water then treats the sewage in its two treatment plants before discharging and/or recycling it.

Other than providing water and sewerage services through its retailers, Central Water is also responsible for the management of the waterways in its region, encompassing: managing stormwater and floodplains; planning infrastructure to service urban development; and protecting and enhancing the health of the region's rivers, creeks, and wetlands. In managing the waterways, Central Water must collaborate with 17 local government authorities that manage the local drains feeding into the regional drainage system.

Central Water charges the retail water companies for the provision of its services, and these charges flow through to customers via the retail water companies. Central Water also directly charges a property rate to all owners in its waterways jurisdiction. Both sets of charges (to the retail water companies and to the property owners) must be approved by the ESC – a process that is deigned to protect the interests of individual customers against the monopoly powers of the service provider.

Central Water is financially dependent on the retail water company payments and customer rates. However, it has no control over the supply of water to the retail companies, because they are *entitled* to supply security under a bulk entitlement agreement. Therefore, Central Water is *ultimately* dependent on government for its resources.

Revenue collections from retail water companies provided the largest share of Central Water's revenue during the period under study. Interviewee comments showed that Central Water kept its retailers reasonably well informed about environmental initiatives, because the environmental costs were carried forward to retail water companies. Moreover, the retail water companies needed to convince their customers of the community benefits of environmental costs incurred by Central Water. Interviewees also pointed out that the organisation wanted to progressively bring customer values into line with its sustainability issues, although they did not clearly explain how this would be achieved. Hence, customers' preferences seemed to have been influential in the inclusion of environmental aspects in corporate decisions, but Central Water had a clear desire to influence customer preferences and understandings, demonstrating a reflexively isomorphic process.

The EPA imposes environmental obligations on Central Water through the EPAct, issuing the operating license. The Act includes sustainability principles that require Central Water to take into account financial *and* environmental costs. The EPA operating licenses aimed to minimise environmental impacts, requiring, for example, monitoring the flows of sewerage discharged into waterways. This regulatory process generated much environmental information, as the organisation needed to be assured that it was compliant.

Another instrument issued through the Water Act was Central Water's SOO, which (as with Pacific Water) guided the organisation's business conduct. It included sustainability principles requiring Central Water to fulfil core water, sewerage, waterways, and recycled water functions in a sustainable way.

To meet sustainability obligations the organisation was required to develop programs to respond to climate change, improve the natural environment, use resources efficiently, and minimise everyday environmental impacts. These obligations required Central Water to generate information about environmental aspects of its activities and use that information in business decisions. The Manager Corporate Strategy explained that Central Water had to meet these sustainability criteria while submitting a water plan to the government every three to five years – requiring environmental and financial information. Firms tend to develop environmental performance measures to meet compliance requirements (Johnston and Smith, 2001), hence, a clear link can be drawn between the embedding of sustainability principles in the SOO and the adoption of EMA by Central Water.

Environmental considerations had the utmost priority in the regular business activities of Central Water:

> The reasons would be if we don't do it ourselves properly somebody will make us do it anyway. (Project Manager, Environmental Regulation and Reporting).

The EPA could prosecute the organisation for any environmental degradation resulting from Central Water's business operations. Hence, to avoid the resultant loss of reputation Central Water would consider environmental impacts in business decisions:

> We assess the environmental impacts of … [business activities] and manage that so that we don't break the law or create such a problem in the community that we lose our reputation. (Project Manager, Environmental Regulation and Reporting)

It is evident that the EPA imposed environmental obligations on Central Water through the EPAct and the issuing of licenses. A clear link can be drawn between the embedding of sustainability principles in the SOO and EMA adoption. Thus, a combination of perceived or potential (or likely) coercive pressures and a normative sense of community expectations were significant in the development of EMA within Central Water. These perceptions, and the notion of legitimacy, attached to the general community-directed endeavours of Central Water rather than being directed towards particular stakeholder groups. Complementing this finding in relation to community norms, prior work has also found an influence of community expectations on firms' environmental practices (e.g. Qian *et al*., 2011).

It is evident from the above analysis that, although Central Water's business involves "natural capital" (see Barton, 1999) in the form of water, its driving motive sat squarely within a commercial logic. However, the organisation also found the need to align its commercial logic with sustainability and community expectations logics, emanating from regulators and customers, in order to legitimate organisational and managerial practices, while progressively seeking to bring customer logics into line with its own. Illustrating Central Water's engagement with the regulatory sphere, the Manager, Corporate Strategy explained the importance of environmental information to legitimate its action to regulators:

> Having that environmental information available means that they all have a common understanding of where we are at, and…having that information helps us to set our future direction as well.

The GM Business services also pointed to this endeavour to ensure alignment between an internal commercial logic and regulatory institutional influences:

> The environmental data that we capture and analyse supports our business decision-making in the short term and long term, and we can say that's environmental data we need to help us achieve that part of our strategic objective or a business objective, and then that relates to our longer term strategic objectives. The capturing of environmental data and lots of other data is fundamental to our ability to make decisions around how we're going to achieve our strategic objectives and then support the business case for them. (GM Business Services)

Organisational practices are structured by 'dominant logics' and elicit an isomorphic responses (Greenwood *et al*., 2010; Lounsbury, 2007). Interviewees of Central Water identified the relevant institutional forces: the EPA licence, sustainability principles in their SOO, and fear of prosecution in case of environmental degradation (and consequent reputational loss). Central Water responded to these forces by monitoring flows of sewerage discharge into waterways, and preparing a water plan encompassing environmental and financial information.

In this case, the concept of reflexive isomorphism helps to explain how EMA adoption in Central Water was also legitimated by responding to the forces on the organisation that relate to the institutional logics of dominant stakeholders *whilst* it sought to influence the shaping of those same logics, especially in the customer realm. Central Water progressively brought its environmental focus and customer values into alignment. This case illustrates multiple logics at work in the organisational field (see Narayanan and Adams, 2017).

5. Discussion

DiMaggio and Powell's (1983) explanation of isomorphism focuses on organisational homogenisation processes rather than exploring the process of aligning an individual organisation's logic to that of the field. We find that water service organisations, as might be expected, seek to legitimate their own position and actions by reflecting institutional logics that are centred on legislative requirements. We have also investigated the interaction of the organisational processes with other institutional influences, demonstrating a legitimating strategy in which organisations actively seek to align field-level and internal logics (Nicholls, 2010). This is evident both in their own adaptations and in the way they seek to influence how logics develop in the field and emerge, in turn, as factors that can provide the organisation with legitimacy.

The three case studies demonstrate how the adoption of EMA is subject to important coercive pressures, as summarised in Table 6. There are four key factors common across the cases: (1) sustainability focus in the Statement of Obligation (SOO); (2) environmental obligations mandated through the EPA; (3) the emergence and influence of the ESC; and (4) reporting to the NPI under the NGER Act 2007. These key factors provided the means of transposing the broad sustainability logic at the level of government to the constituents of the organisational field (of particular interest here: the three water companies). Individual water organisations aligned their own commercial logic with the dominant stakeholder sustainability logic through their responses to these key regulatory/coercive factors.

<Insert Table 6 about here>

Whether an organisation should incorporate EMA into its decision-making structure is generally regarded as an internal management concern. However, the operation of institutional isomorphism, as shown here, suggests that water organisations conserve water, reduce greenhouse gas emissions, implement EMS, refine existing environmental reporting, and report through the NPI in order to align their commercial logic to the sustainability logics in the institutional field. This is highlighted in Table 7.

<Insert Table 7 about here>

The case studies also highlight that the key coercive force was regulatory change since mid-2000s (during this period the drought became severe), highlighted in Table 8. This produced increased requirements for certain environment-related disclosures, acting as a further impetus for EMA adoption.

<Insert Table 8 about here>

Analysis of the interview data highlighted how regulatory changes in the mid-2000s directly influenced EMA adoption, and the case study water organisations responded to regulatory changes in ways that legitimated their EMA adoption. The annual report content analysis found an upward trend in EMA and environmental performance disclosures over the same period (see Figure 1). The case analysis found that during this period comparative performance reporting about the environmental performance of water companies, issued to the public by the regulatory authorities provided an impetus, through initiating 'competition by comparison' among water companies, to improve performance through EMA adoption.

Prior research has shown how similar requirements put direct pressure on local government to collect EMA information (Qian *et al.*, 2011. Similarly, interviewees from Atlantic Water pointed to the particular reporting requirements of the NPI as a coercive force for measuring, monitoring, and reporting environmental impacts. Therefore, there was a synergistic relationship between mandated reporting requirements and EMA adoption. While Pacific Water and Central Water were subject to the same legislative requirements, the interview data did not provide evidence that this was a prominent motivating factor in their EMA adoption. In these cases, other institutional factors were more important, such as the emergence of the ESC and embedding of sustainability principles in SOOs. However, the content analysis of environmental performance reporting in annual reports of these organisations showed a similar trend to Atlantic Water (see Table 5).

A comparison of the average score of the four perspectives included in Table 5 shows that the highest environmental performance disclosure related to the input–output perspective (36.58%). This reflects regulatory reporting requirements of water authorities by the DSE, EPA, and ESC. For example, the environmental performance indicators reported to the ESC cover sewage treatment and compliance, the recycling of effluent, bio-solid reuse, and greenhouse gas emissions, most of which relate to the input–output perspective.

The target audience of water company annual reports include government and community stakeholders. So, water companies' regulated reporting requirements were also reflected in annual reports directed at broader stakeholder groups. The finding that the highest level of disclosure across the three cases relates to the input–output perspective indicates that operational performance primarily focused on environmental performance evaluation, and water companies actively embraced the sustainability logic influenced by government and community (see Brodnik, Brown and Cocklin, 2017). Thus, the case organisations measured and monitored environmental performance to achieve and report mandated performance criteria, which, in turn, acted as a driver for EMA adoption.

The four coercive pressures for the adoption of EMA originated from sustainability compliance requirements and related reporting requirements of the complex regulatory framework faced by the organisations. It is significant to note that all of the case organisations did not feel identical coercive pressures from the SOO, EPA, ESC, and NPI, even though they were subject to the same regulatory framework (see Table 6). Hence, it is reasonable to conclude that, when the dominant stakeholders seek to impose their particular institutional logics, institutional influences and resultant institutional changes are not equally felt by individual constituents in the field; the adoption of different internal mechanisms for improved environmental performance may be evident.

The nature of the water industry is such that there is a resource dependency between the ESC and water authorities[6]. The ESC also mandates environmental performance in key areas concerning sewage treatment, recycling of effluent, bio-solids reuse, and greenhouse gas emissions. Hence, while the water organisations reflexively legitimate their EMA adoption through their actions in light of different institutional pressures (further discussed below), we conclude that the coercive pressure from the ESC was particularly potent in the case organisations. This is because they were strongly constrained by the ESC both in the coercive realm and in terms of availability of resources. Water authorities undertook steps to achieve regulated performance in order to ensure a smooth flow of resources, as the inclusion of environmental costs in approved pricing changes was dependent on environmental initiatives. Hence, a clear link was evident between resource dependency on the ESC and EMA adoption.

Beyond the regulatory institutional pillar, our findings also suggest that customers were a key stakeholder group influencing EMA adoption. Non-financial factors identified with increasing customer salience included: (1) valuing customers' feedback in strategic decisions; (2) aligning organisational responses to sustainability issues and customer values; and (3) understanding customers' environmental concerns. We found the traditional institutional influences supplemented by an additional element in that the case organisations legitimated EMA adoption through processes of *reflexive isomorphism*. Together, the key factors above reflect the 'ensuring community expectations' logic. Particularly in terms of the second factor, the water companies demonstrated reflexive isomorphism in the manner in which they engaged with community groups, substituted potable water, attended community forums, and similar processes (see Table 8). The endeavour to align commercial logic and dominant stakeholder 'ensuring community expectations' logics was warranted by regulatory expectations that reflected a coercive institutional pressure: "Sometimes the regulators are seen as the customers' representative on some of the [environmental] issues"

(Chief Financial Officer, Atlantic Water). However, it is also an illustration of the manner in which the organisation projected its own internal logic out into the field with which it was institutionally engaged (that is, reflexive isomorphism).

A two-way dialogue with customers was in place in all three cases, through which the case organisations enacted processes of reflexive isomorphism. For example, during the 2000s decade, when the state suffered continuous drought, interviewees noted an interest from the customers in accessing recycled water and seeking opportunities to reduce potable water demand by increasing recycled water use, even as corporate engagement with customers sought to influence the nature of the customer response. Such two-way dialogue with stakeholders has an impact on the nature and content of environmental reporting (Adams, 2002) and may support the emergence of logics that value environmental sustainability, which "focus on community base value and arrangements as well as belief in trust and reciprocity" (Fuenfschilling and Truffer, 2014, p. 779).

In summary, varied institutional influences worked together to shape EMA adoption. As Dillard *et al.* (2004, p. 509) state: "By designing a formal structure that adheres to the norms and behaviour expectations in the extant environment, an organisation demonstrates that it is acting on collectively valued purpose in a proper and adequate manner". The present study also shows how this process may be supplemented by reflexive isomorphism whereby the organisation actively seeks to shape values in the emergent filed, including through its own processes of responding to these values. The case organisations in this study incorporated environmental aspects of corporate activities into business decisions, through EMA adoption, in order to bring legitimacy to their efforts to sustainably operate within a commercial logic.

6. Conclusion

This paper provides a deeper understanding of the interplay of drivers of EMA in the Australian water industry. The analysis shows how water organisations align and adapt their existing institutional logics with influential institutional logics in the field. This alignment was reflected in the way our case organisations valued environmental sustainability, demonstrated environmental performance improvement, and modified existing reporting and operational activities. These all provided organisational legitimacy in the environmental and sustainability arenas.

The emergence of the ESC represented a significant change in the institutional environment, magnifying the importance of the government-driven sustainability logic and presenting significant coercive pressures via a legal regulatory framework. Upon aligning their commercial logic with the sustainability logic of the government (through actions in water conservation, greenhouse emission reduction, and environmental reporting), water organisations *became* reflexively isomorphic in their engagement with stakeholders (primarily customers, but also government). Reflexive isomorphism helps to explain the multifaceted and complex nature of processes through which organisations align their internal logics and activities with institutional expectations, even in cases where the latter are strongly influenced by coercive power of a government regulator. This shows the reflexive interplay of internal organisational logics with external institutional influences, encompassing a broad range of legitimating mechanisms.

It was posited that water organisations would align their institutional logics through environmental performance improvement and by signifying organisational capacity to handle environmental uncertainty. The evidence showed that the water companies tended to align their commercial logic with an 'ensuring community expectations' logic, that was reinforced by the influence of government. This was done through engaging in particular environmental activities and engaging the community in various ways. Again, however, these processes also represented means of reflexive isomorphism in relation to EMA adoption. This emphasises how, while organisational legitimacy is linked to complying with the institutional logics of regulators (see Meyer and Rowan, 1977), and "institutional logics remain closely aligned to their categories … the unfolding of these categories remains flexible to a certain degree" (Brodnik *et al.,* 2017, p. 2311).

Overall, we found that regulatory (coercive) pressures to improve the environmental performance of water organisations presented a key impetus for water organisations to adopt EMA. At the same time, commercial and stakeholder logics were significant, and water organisations engaged in reflexively isomorphic processes that sought to strategically self-legitimate through alignment of internal and field logics. Thus, institutional influences *on* organisations were supplemented by processes of reflexive isomorphism, through which organisations could project their own logics into the field (to which they ostensibly responded).

The paper contributes, first, to an understanding of institutional pressures in relation to EMA adoption. The water companies conformed to institutional expectations with regard to EMA, and that conformity was fuelled by their resource dependency on coercive institutional forces such as the EPA and the ESC. Customers were the other key stakeholder group, but institutional influences in this domain were more complex.

A second area of contribution arises from the analysis of reflexive isomorphism. The analysis in this paper extends research on new institutional sociology in the context of environmental accounting. A fourth type of isomorphic pressure, reflexive isomorphism (originally identified as the process of paradigm building in social entrepreneurship – Nicholls, 2010), was empirically tested in our research in the context of EMA adoption. In this study, this was most notable in various processes of organisational engagement with customers, through which the companies sought to bring customer values into alignment with the existing logics of the organisation (including those influenced directly by regulatory forces, and the commercial logic of the organisation). This, in turn, was also reflected in the way the case companies refined existing environmental reports, or developed new reporting to the NPI, and prepared water plans encompassing environmental and financial information. This research therefore provides evidence the applicability of reflexive isomorphism for aligning institutional logics from the field with the institutional logics of individual organisations, in the context of endeavours to legitimate organisational actions in adopting EMA.

Third, this paper also contributes to the literature on institutional logics, particularly in the analysis of alignment of the logic of individual constituents with that of dominant stakeholders. This contribution particularly responds to a call made by Lansiluoto (2016, p. 168) to examine "the potential of the institutional logic approach in interpreting

management accounting change in general and environmental measures in particular". Furthermore, this research provides evidence of how a dominant stakeholder imposes its logic on individual constituents in the field, and how individual organisations respond to institutional pressures in the context of broader environmental concerns embracing practice change. Overall, our study has advanced empirical evidence of the development, interaction, and impacts of multiple institutional logics in the context of environmental accounting.

References

Adams, C.A. (2002), "Internal organisational factors influencing corporate social and ethical reporting: Beyond current theorising", *Accounting, Auditing and Accountability Journal,*Vol. 15 No.2, pp. 223–250.

Adams, C.A. and McNicholas, P. (2007), "Making a difference: sustainability reporting, accountability and organisational change", *Accounting, Auditing and Accountability Journal* Vol. 20 No. 3, pp. 382–402.

Ball, A. and Craig, R. (2010), "Using neo-institutionalism to advance social and environmental accounting", *Critical Perspectives on Accounting*, Vol. 21 No. 4, pp. 283–293.

Bartolomeo, M., Bennett, M., Bouma, J.J., Heydkamp, P., James, P. and Wolters, T. (2000),"Environmental management accounting in Europe: Current practice and future potential", *European Accounting Review*, Vol. 9 No. 1, pp. 31–52.

Barton, A.D. (1999), "A trusteeship theory of accounting for natural capital assets." *Abacus*, Vol. 35 No. 2, pp. 207–222.

Brodnik, C., Brown, R. and Cocklin, C. (2017), "The institutional dynamics of stability and practice change: The urban water management sector of Australia (1970-2015)", *Water Resource Management,* Vol. 31 No. 7, pp. 2299–2314.

Buhr, N. and Freedman, M. (2001), "Culture, institutional factors and differences in environmental disclosure between Canada and the United States", *Critical Perspectives on Accounting*, Vol. 12 No. 3, pp. 293–322.

Burnett, R.D. and Hansen, D.R. (2008), "Ecoefficiency: Defining a role for environmental cost management", *Accounting, Organizations and Society*, Vol. 33 No. 6, pp. 551–581.

Burritt, R. (2004), "Environmental management accounting: roadblocks on the way to the green and pleasant land", *Business Strategy and the Environment*, Vol. 13 No. 1, pp. 13–32.

Burritt, R. (2012), "Environmental performance accountability: planet, people, profits", *Accounting, Auditing and Accountability Journal,*Vol. 25 No. 2, pp. 370–405.

Burritt, R.L., Hahn, T. and Schaltegger, S. (2002), "Towards a comprehensive framework for environmental management accounting — Links between business actors and environmental management accounting tools", *Australian Accounting Review*, Vol. 12 No. 2, pp. 39–50.

Cashman, A. and Lewis, L. (2007), "Topping up or watering down? Sustainable development in the privatized UK water industry", *Business Strategy and the Environment*, Vol. 16 No. 2, pp. 93–105.

Christ, K.L. (2014), "Water management accounting and the wine supply chain: Empirical evidence from Australia", *British Accounting Review*, Vol. 46 No. 4, pp. 379–396.

Christ, K.L. and Burritt, R.L. (2017), “Supply chain-oriented corporate water accounting: a research agenda”, *Sustainability Accounting, Management and Policy Journal,* Vol. 8 No. 2, pp. 216–242.

Christ, K.L., Burritt, R.L. and Varsei, M. (2016), "Towards environmental management accounting for trade-offs", *Sustainability Accounting, Management and Policy Journal*, Vol. 7 No. 3, pp. 428–448.

Clegg, S. (2010), “The State, power, and agency: Missing in action in institutional theory?”*Journal of Management Inquiry*, Vol. 19 No. 1, pp. 4–13.

Dillard, J.F., Rigsby, J.T. and Goodman, C. (2004), “The making and remaking of organization context: duality and the institutionalization process”, *Accounting, Auditing and Accountability Journal*, Vol. 17 No. 4, pp. 506–542.

DiMaggio, P.J. and Powell, W.W. (1983), “The iron case revisited: Institutional isomorphism and collective rationality in organization fields”, *American Sociological Review,* Vol. 48 No. 2, pp. 147–160.

Egan, M. (2014), “Progress towards institutionalising field-wide water efficiency change”, *Accounting, Auditing and Accountability Journal*, Vol. 27 No. 5, pp. 809–833.

Ferreira, A., Moulang, C. and Hendro, B. (2010), “Environmental management accounting and innovation: an exploratory analysis”, *Accounting, Auditing and Accountability Journal*, Vol. 23 No.7, pp. 920–948.

Frost, G. and Seamer, M. (2002), “Adoption of environmental reporting and management practices: an analysis of New South Wales public sector”, *Financial Accountability and Management*, Vol. 18 No.2, pp. 103–127.

Fuenfschilling, L. and Truffer, B. (2014), “The structuration of socio-technical regimes—Conceptual foundations from institutional theory”, *Research Policy,* Vol. 43, pp. 772–791.

Fuenfschilling, L. and Truffer, B. (2016), “The interplay of institutions, actors, and technologies in socio-technical systems – An analysis of transformations in the Australian urban water sector”, *Technological Forecasting and Social Change*, Vol. 103, pp. 298–312.

Gibassier, D. (2017), “From ecobilan to LCA: the elite’s institutional work in the creation of an environmental management accounting tool”, *Critical Perspective on Accounting*, Vol. 42, pp. 36–58.

Gibassier, D. and Alcouffe, S. (2018). “Environmental management accounting: The missing link to sustainability?” *Social and Environmental Accountability Journal*, Vol. 38 No. 1, pp. 1–18.

Gibassier, D. and Schaltegger, S. (2015), “Carbon management accounting and reporting in practice – a case study on converging emergent approaches”, *Sustainability Accounting, Management and Policy Journal,* Vol. 6 No. 3, pp. 340–365.

Gray, R., Adams, C.A. and Owen, D. (2014), Accountability, Social Responsibility and Sustainability: Accounting for Society and the Environment. Pearson, UK.

Gray, R., Owen, D. and Adams, C. (2009), “Some theories for social accounting?: A review essay and tentative pedagogic categorisation of theorisations around social accounting”, In Martin Freedman & BikkiJaggi (Eds.), *Sustainability, Environmental Performance and Disclosures (Advances in Environmental Accounting & Management*, Volume 4), pp. 1 – 54.

Green, K., Morton, B. and New, S. (1996), “Purchasing and environmental management: interactions, policies and opportunities”, *Business Strategy and the Environment*, Vol. 5 No. 3, pp. 188–197.

Green, R., Diaz, A.M., Li, S.X. and Lorente, J.C. (2010), "The multiplicity of institutional logics and the heterogeneity of organizational responses", *Organization Science*, Vol. 21 No. 2, pp. 521–539.

Haque, S. and Deegan, C. (2010), "Corporate climate change-related governance practices and related disclosures: evidence from Australia", *Australian Accounting Review*, Vol. 20 No. 4, pp. 317–333.

Hart, S.L. and Ahuja, G. (1996), "Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance", *Business Strategy and the Environment*, Vol. 5 No. 1, pp. 30–37.

Herzig, C., Viere, T., Schaltegger, S. and Burritt, R.L. (2012), *Environmental Management Accounting: Case Studies of South-East Asian Companies*, Routledge, Abingdon.

Hopwood, A.G. and Miller, P. (1994), *Accounting as social and institutional practice.* Cambridge University Press. Cambridge, UK.

Hörisch, J., Ortas, E., Schaltegger, S. and Álvarez, I. (2015), "Environmental effects of sustainability management tools: An empirical analysis of large companies" *Ecological Economics*, Vol. 120, pp. 241–249.

Ilinitch, A.Y., Soderstrom, N.S. and Thomas, T.E. (1998), "Measuring corporate environmental performance", *Journal of Accounting and Public Policy*, Vol. 17, pp. 383–408.

Järvinen, J.T. (2016), "Role of management accounting in applying new institutional logics – a comparative case study in the non-profit sector", *Accounting, Auditing and Accountability Journal,* Vol. 29 No. 5, pp. 861–886.

Johnston, A. and Smith, A. (2001), "The characteristics and features of corporate environmental performance indicators – a case study of the water industry of England and Wales", *Eco-Management and Auditing*, Vol. 1 No. 1, pp. 1–11.

Kamal, O., Brown, D., Sivabalan, P. and Sundin, H. (2015), "Accounting information and shifting stakeholder salience: an industry level approach", *Qualitative Research in Accounting and Management*, Vol. 12 No. 2, pp. 172–200.

Kokubu, K. and Nakajima, M. (2004), "Sustainability accounting initiatives in Japan – pilot project of material flow cost accounting", in *Eco-efficiency and Beyond: Towards the Sustainable Enterprise*, Jan-Dirk, S., Christa, L. and Ernst, U.V.W. (eds.), Greenleaf Publishing, Sheffield, pp. 100–112.

Lander, M.W., Koene, B.A.S and Linssen, S.N. (2013), "Committed to professionalism: Organizational responses of mid-tier accounting firms to conflicting institutional logics", *Accounting, Organizations and Society*, Vol. 38, pp. 130–148.

Lansiluoto, M.J.A. (2016), "Collective identity, institutional logic and environmental management accounting change", *Journal of Accounting & Organizational Change*, Vol. 12 No. 2, pp. 152–176.

Larrinaga-Gonzalez, C., Carrasco-Fenech, F., Caro-Gonzalez, F.J., Correa-Ruiz, C. and Paez-Sandubete, J.M. (2001), "The role of environmental accounting in organizational change-An exploration of Spanish companies", *Accounting, Auditing and Accountability Journal,* Vol. 14 No. 2, pp. 213–239.

Larrinaga-Gonzelez, C. and Perez-Chamorro, V. (2008), "Sustainability Accounting and Accountability in Public Water Companies", *Public Money & Management*, Vol. 28 No. 6, pp. 337–343.

Lauesen, L.M. (2014), "How well are water companies engaged in CSR? A critical cross-geographical discourse analysis", *Social Responsibility Journal*, Vol. 10 No. 1, pp. 115–136.

Lounsbury, M. (2007), “A tale of two cities: competing logics and practical variation in the professionalizing of mutual funds”, *Academy of Management Journal*, Vol. 50 No.2, pp. 289–307.

Lounsbury, M. (2008), “Institutional rationality and practice variation: New directions in the institutional analysis of practice”, *Accounting, Organizations and Society*, Vol. 33 Nos. 4–5, pp. 349–361.

McDonald-Kerr, L. (2017), “Water, water, everywhere: using silent accounting to examine accountability for a desalination project”, *Sustainability Accounting, Management and Policy Journal*, Vol. 8 No. 1, pp. 43–76.

McKay, J. (2006), “Issues of CEOs of water utilities with the implementation of Australian water laws”, *Journal of Contemporary Water Research and Education*, Vol. 135 No. 1, pp. 115–130.

Meyer, J.W. and Rowan, B. (1977), “Institutionalized organizations: Formal structures as myth and ceremony”, *American Journal of Sociology*, Vol. 83 No. 2, pp. 340–363.

Miles, M.B. and Huberman, A.M. (1994), *Qualitative data analysis: An expanded sourcebook*, Sage, Thousand Oaks.

Miller, P. (1994), “Accounting as social and institutional practice: an introduction”, in Hopwood, A.G., & Miller, P. (Eds.), *Accounting as social and institutional practice,* Cambridge University Press, Cambridge, UK, pp. 1–39.

Mitchell, R.K., Agle, B.R. and Wood, D.J. (1997), “Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts”, *Academy of Management Review*, Vol. 22 No. 4, pp. 853–886.

Moore, D. (2008), “Transformation of the Australian public sector and environmental accounting practices: the case of water in 2001”, *Australasian Accounting Business and Finance Journal,* Vol. 2 No. 1, pp. 60–81.

Narayanan, V. and Adams, C.A. (2017), “Transformative change towards sustainability: the interaction between organizational discourses and organizational practices”, *Accounting and Business Research*, Vol. 47 No. 3, pp. 344–368.

National Competition Council (1998), *Compendium of National Competition Policy Agreement*, Second Edition, AGPS, Canberra.

Nicholls, A. (2010), “The legitimacy of social entrepreneurship: reflexive isomorphism in a pre-paradigmatic field”, *Entrepreneurship Theory and Practice,* Vol. 34 No. 4, pp. 611–633.

Norris, G. and O’Dwyer, B. (2004), “Motivating socially responsive decision making: the operation of management controls in a socially responsive organization”, *The British Accounting Review,* Vol. 36 No. 2, pp. 173–196.

Ocasio, W. (1997), “Towards an attention-based view of the firm”, *Strategic Management Journal*, Vol. 18, pp. 187–206.

Parliament of Victoria (2001, November), *Inquiry into the Allocation of Water Resources*. Environment and Natural Resource Committee, Parliament of Victoria, Melbourne.

Phan, T., Baird, K. and Su, S. (2017), “The use and effectiveness of environmental management accounting”, *Australasian Journal of Environmental Management,* Vol. 24 No. 4, pp. 355–374.

Qian, W., Hörisch, J & Schaltegger, S. (2018), “Environmental management accounting and its effects on carbon management and disclosure quality”, *Journal of Cleaner Production,* Vol. 174, pp. 1608–1619

Qian, W. and Schaltegger, S. (2017), "Revisiting carbon disclosure and performance: legitimacy and management view", *The British Accounting Review*, Vol. 49, pp. 365–379.

Qian, W., Burritt, R. and Monroe, G. (2011), "Environmental management accounting in local government – A case of waste management", *Accounting, Auditing and Accountability Journal,* Vol. 24 No. 1, pp. 93–128.

Rautiainen, A., Urquía-Grande, E. and Muñoz-Colomina, C. (2017), "Institutional Logics in Police Performance Indicator Development: A comparative Case Study of Spain and Finland", *European Accounting Review*, Vol. 26 No. 2, pp. 165–191

Schaltegger, S. and Burritt, R. (2000), *Contemporary Environmental Accounting: Issues, Concepts and Practice*, Greenleaf Publishing Limited: Sheffield.

Schaltegger, S. and Hörisch, J. (2017), "In search of the dominant rationale in sustainability management: legitimacy – or profit-seeking", *Journal of Business Ethics*, Vol. 145 No. 2, pp. 259–276.

Scott, W. (2008), Institutions and organizations: Ideas and interests. Sage, Thousand Oaks.

Thornton, P.H. (2002), "The rise of the corporation in a craft industry: conflict and conformity in institutional logics", *Academy of Management Journal*, Vol. 45 No. 1, pp. 81–101.

Thornton, P.H. and Ocasio, W. (1999), "Institutional logics and the historical contingency of power in organizations: executive succession in the higher education publishing industry, 1958-1990", *American Journal of Sociology*, Vol. 105 No. 3, pp. 801–843.

Thornton, P.H., Ocasio, W. and Lounsbury, M. (2012), *The institutional logics perspective: a new approach to culture, structure, and process*, Oxford University Press, Oxford and New York.

Tucker, B. and Parker, L. D. (2015), "Business as usual? An institutional view of the relationship between management control systems and strategy", *Financial Accountability and Management,* Vol. 31 No. 2, pp. 113–149.

Werbeloff, L., Brown, R. and Cocklin, C. (2017), "Institutional change to support regime transformation: Lessons from Australia's water sector", *Water Resources Research*, Vol. 53, pp. 5845–5859.

Wijethilake, C., Munir, R. and Appuhami, R. (2017), "Strategic responses to institutional pressures for sustainability: The role of management control systems", *Accounting, Auditing and Accountability Journal,* Vol. 30 No. 8, pp. 1677–1710.

Xie, S. and Hayase, K. (2007), "Corporate Environmental Performance Evaluation: a Measurement Model and a New Concept", *Business Strategy and the Environment*, Vol. 16 No. 2, pp. 148–168.

Zhang, G., Boyce, G. and Ahmed, K. (2014), "Institutional changes in university accounting education in post-revolutionary China: From political orientation to internationalization", *Critical Perspectives on Accounting*, Vol. 25 No. 8, pp. 819–843.

Table 1: Profile of case organisations

Organisation	Revenue ($'000)[7]	Employees	Net Profit ($'000)	Total Assets ($'000)	Population served	Area covered (km^2)	Type of customers served	Type of Services
Pacific Water	60,000	150	5,000	505,000	141,000	3,000	Regional urban (non-metropolitan)	Water and sewerage services
Atlantic Water	47,000	140	4,000	487,000	99,000	20,000	Regional	Water and sewerage services
Central Water	848,000	820	230,000	8,948,000	3,638,000	8,000	Metropolitan retail water business	Catchment, service reservoir and treatment plant management

Table 2: Summary profile of interviewees

	Position designation	Time in organisation
Pacific Water	GM, Commercial Services	Not disclosed
	Manager Assets	Not disclosed
	Senior Environmental Engineer	6 years
	GM, Sustainability	14 years
	Manager, Finance	3½ years
	Manager, Renewable Resources	7 years
	Manager, Organisational Development and Risk	2 years
	Manager, Water System	2 years
	Manager, Capital Investment	6 years
	MD	8 years
	GM, Customer and Community Relations	2 years
	Senior Financial Accountant	8 years
Central Water	Project Manager, Environmental Regulation and Reporting Officer	18 years
	GM, Business Services	28 years
	Team Leader, Sustainability Strategic Planning	2½ years
	Manager, Corporate Strategy	23 years
Atlantic Water	Manager Financial Reporting	2½ years
	Re-use Co-ordinator	10 years
	Executive Manager, Corporate Strategy	7 months
	Manager, Sustainability and Environment	4 years
	Chief Operating Officer	5 years
	Chief Financial Officer	10 years
	Strategy and Development Manager	15 years

Table 3: Physical EMA disclosures in annual reports (2001–2010)

Category	Physical or qualitative information disclosures	Case organisation		
		Pacific Water	Atlantic Water	Central Water
		n (years)	n (years)	n (years)
Product output	1. Volumeofwater purchased	1 (10)	3 (05,06,09)	0
	2. Volume of water extracted	3 (07,08,09)	9 (02,03,04,05,06,07,08,09,10)	3 (06,07,09)
	3. Volume of chemicals used for water treatment	0	3 (08,09,10)	0
	4. Volume of energy/electricity used for water and wastewater treatment	4 (03,05,06,07)	3 (08,09,10)	3 (06,07,10)
	Total	8	18	6
	% of total	15.38%	31.57%	14.39%
Non-product output	1. Volume of water loss	8 (02,03,05,06,07,08,09,10)	8 (02,03,04,06,07,08,09,10)	2 (08,09)
	2. Volume of chemical used related to water loss	0	0	0
	3. Volume of electricity used related to water loss	0	0	0
	Total	8	8	2
	% of total	15.38%	14.03%	4.76%
Waste flows	1. Volume of water recycled	9 (02,03,04,05,06,07,08,09,10)	6 (02,03,04,05,06,07)	10 (01,02,03,04,05,06,07,08,09,10)
	2. Volume of recycled water reused	6 (04,05,06,08,09,10)	10 (01,02,03,04,05,06,07,08,09,10)	10 (01,02,03,04,05,06,07,08,09,10)
	3. Volume of potable water substituted with RW/saved	6 (04,06,07,08,09,10)	1 (10)	3 (04,08,10)
	4. Volume of bio-solids	7	4	2

	recycled and reused	(03,05,06,07,08,09,10)	(07,08,09,10)	(03,04)
	Total	28	21	25
	% of total	53.84%	36.84%	59.52%
Externalities	1. Emissions generated by operations	5 (06,07,08,09,10)	8 (03,04,05,06,07,08,09,10)	6 (03,05,07,08,09,10)
	2. Damage to river health from operations	2 (08,10)	2 (01,06)	2 (06,10)
	3. Environmental benefits from water recycling	0	0	0
	4. Environmental benefits from bio-solids reuse	**1** (08)	0	0
	5. Loss of bio-diversity from operations	0	0	1 (07)
	Total	8	10	9
	% of total	15.38%	17.54%	21.43%
Total across all categories		52	57	43
% of total		34.21%	37.5%	28.29%

Table 4: Monetary EMA disclosures in annual reports (2001–2010)

Category	Monetary information disclosures	Case organisation		
		Pacific Water	Atlantic Water	Central Water
		n (years)	n (years)	n (years)
Product output	1. Costs ofwater purchased	4 (06,08,09,10)	0	0
	2. Costs of water extracted	0	0	0
	3. Costs of chemicals for treatment*	8 (02,03,04,05,06,07,08,09)	0	0
	4. Costs of energy/electricity for treatment*	0	0	0
	Total	12	0	0
Non-product output	1. Costs of water loss	0	0	0
	2. Costs of chemical related to water loss	0	0	0
	3. Costs of electricity related to water loss	0	0	0
	Total	0	0	0
Waste flows	1. Capital costs of water recycling	6 (04,05,07,08,09,10)	1 (07)	1 (10)
	2. Operating costs of water recycling	5 (05,07,08,09,10)	0	0
	3. Proceeds from recycled water	6 (05,06,07,08,09,10)	1 (10)	0
	4. Expenditure related to bio-solids recycled	0	0	0
	5. Monetary benefits from bio-solids reuse	0	0	0
	Total	17	2	1
Indirect costs	1. R&D costs related to water loss reduction	0	**0**	**0**

	2. R&D costs for increasing recycled water and bio-solids use	0	**0**	**0**
	3. R&D costs for emission reduction	0	0	0
	4. Administrative costs for environmental management	0	0	0
	5. Environmental contribution	6 (05,06,07,08,09,10)	6 (05,06,07,08,09,10)	6 (05,06,07,08,09,10)
	Total	6	6	6
Externalities	1. Costs associated with reduction of emissions	0	0	0
	2. Costs associated with improving river health	0	0	4 (04,06,07,10)
	3. Costs associated with controlling toxic and odorous from treatment process	0	0	1 (09)
	4. Costs associated with protecting bio-diversity	1 (08)	0	1 (08)
	Total	1	0	6
Total across all categories		36	8	13

* Treatment includes both water and wastewater treatment.

Table 5: Environmental performance disclosures in annual reports (2001–2010)

Perspective	Disclosure Items	Case organisation		
		Pacific Water	Atlantic Water	Central Water
		n (years)	n (years)	n (years)
Organisational system development	1. Strengthening EMS	6 (05,06,07,08,09,10)	5 (01,02,08,09,10)	4 (07,08,09,10)
	2. Environmental policy or mission statement	1 (05)	2 (02,03)	2 (07,10)
	3. Responsibility of board of directors committee responsible for environmental policy	1 (07)	0	7 (04,05,06,07,08,09,10)
	4. Environmental performance* as a factor of executive compensation	0	0	0
	5. Environmental audit	1 (07)	2 (08,09)	0
	6. R&D for environmental performance improvement	3 (04,06,07)	1 (01)	8 (02,03,04,05,06,07,09,10)
	7. Employee training for environmental performance improvements	1(07)	1 (09)	1 (09)
	Total	13	11	22
	% of total	17.81%	16.42%	23.16%
Stakeholder	8. The involvement of government, customer, community, supplier and industry for environmental performance improvement	8 (01,04,05,06,07,08,09,10)	7 (03,05,06,07,08,09,10)	10 (01,02,03,04,05,06,07,08,09,10)
	9. The performance of activities (e.g. tree plantation) to protect biodiversity	8 (03,04,05,06,07,08,09,10)	8 (03,04,05,06,07,08,09,10)	8 (03,04,05,06,07,08,09,10)
	10. The performance of resource (paper, water and energy) use by Employee and achievementagainst	1 (10)	2 (08,10)	3 (08,09,10)

	the target.			
	11. The activity to protect or improve river/creek health	6 (05,06,07,08,09,10)	7 (03,04,05,06,08,09,10)	10 (01,02,03,04,05,06,07,08,09,10)
	Total	23	24	31
	% of total	31.51%	35.82%	32.63%
Strategies	12. The initiatives of increasing energy efficient project/ equipment	4 (05,08,09,10)	2 (04,10)	5 (05,06,07,09,10)
	13. The performance of increasing renewable energy	1 (09)	0	7 (02,03,06,07,08,09,10)
	14. The redesign of process of delivering services for environmental performance improvement	3 (07,09,10)	0	2 (08,10)
	15. The target of environment friendlycar use and achievement against the target	0	0	1 (03)
	Total	8	2	15
	% of total	10.96%	2.91%	15.79%
Input–output	16. The performance of water consumption by customer	8 (03,04,05,06,07,08,09,10)	5 (01,06,07,09,10)	2 (08,10)
	17. The performance of reducing electricity use	0	1 (06)	1 (08)
	18. The performance of water loss reduction	5 (05,06,08,09,10)	2 (08,10)	3 (04,05,10)
	19. The performance of greenhouse gas emissions reduction	3 (07,09,10)	3 (08,09,10)	7 (03,05,06,07,08,09,10)
	20. The performance of recycled water reuse	6 (05,06,07,08,09,10)	7 (02,03,04,05,06,07,10)	6 (05,06,07,08,09,10)

	21. The target of bio-solids recycled and reuse and achievement against the target	4 (06,07,09,10)	7 (02,03,04,06,07,09,10)	7 (03,04,06,07,08,09,10)
	22. The performance of trade waste management	3 (05,08,09)	5 (03,06,08,09,10)	0
	23. The target of solid waste (from office and contractor activity) recycled and achievement against the target	0	0	1 (10)
	Total	29	30	27
	% of total	39.73%	44.78%	28.42%
Total across all categories		73	67	95

* Environmental performance in all cases refers to minimisingcustomer consumption of treated drinking water, minimising water loss through supply and operation, ensuring quality of discharge into sewage and waterways, maximizing recycled water use, greenhouse gas reduction, protecting bio-diversity, and improving river health.

Table 6: Key coercive factors motivating adoption of EMA

Coercive Factor	Pacific	Atlantic	Central
Emergence of Essential Services Commission (ESC)	**x**		
Environment Protection Act 1970		**x**	
Environment Protection Authority licensing agreement	**x**		**x**
National Greenhouse and Energy Reporting Act 2007 (NGER Act)		**x**	
Statement of Obligation	**x**		**x**

Table 7: Transformation of institutional logics to individual constituents of the field and organisational responses

Government Logic	Driver of logic transformation	Organisational response	Organisational logic
Pacific Water			
Sustainability logic	Statement of Obligation	Water conservation and greenhouse gas emissions reduction	Commercial logic
	Environmental Protection Authority licensing agreement	EPA Licensing	
	Reporting to ESC	Refining existing environmental reports	
Ensuring community expectations logic	Protecting community interests	Engaging community groups in decision making processes	
	Supply security in times of uncertainty	Potable water substitution	
Atlantic Water			
Sustainability logic	The Environmental Protection Act 1970 (EPAct) - Environmental Protection Policies - EPA Licensing	Environmental Management System (EMS) in corporate licence	Commercial logic
	National Greenhouse and Energy Reporting Act 2007 (NGER Act)	Reporting through the National Pollutant Inventory	
Ensuring community expectations logic	Community environmental concerns	Engaging community in project implementation process – particularly environmental monitoring Community forums Reporting potential impacts of climate change on water system	
Central Water			
Sustainability logic	Environmental Protection Authority licensing agreement - Minimising environmental impact	Monitoring the flows of sewerage discharge into waterways	Commercial logic
	Statement of Obligation	Preparing Water plan encompassing environmental and financial information	
Ensuring	Prosecution by EPA in case of environmental	Progressively bringing environmental focus	

community expectations logic	degradation	into line with customer values	

Table 8: Regulatory changes in mid-2000s influencing EMA adoption

Year	Regulatory Change
2004	The Essential Services Commissions (ESC) extended its role in 2004 to include regulation regarding Victorian water and sewerage services encompassing pricing, service standard and market conduct.
2004	The amendment of the Water Industry Act 1994 by *Water Industry (Environmental Contribution) Act 2004*.
2007	The emergence of the *National Greenhouse and Energy Reporting (NGER) Act* 2007 necessitated the capture, understanding and reporting of greenhouse gas emissions that were previously reported, along with other National Pollutant Inventory (NPI) substances, under *NPI NEPM Act*. With the emergence of the *NGER Act 2007*, emission reporting gained momentum in the Victorian water industry.
2007	Environmental Protection Authority licensing agreement in 2007 illustrates a sustainability commitment, process and priorities to increase the sustainability and resource efficiency of business operations.

Figure 1: Environmental performance disclosure (EPD) and EMA information disclosure (Aggregate for the three case organisations, 2001–2010 – based on data displayed in Tables 3–5)

[1] New institutionalism, or new institutional sociology (NIS), as applied in the accounting literature (see Miller, 1994) proposes that organisations tend to conform to societal norms of acceptable practice to ensure their survival vis-à-vis external social legitimacy. The use of this approach within accounting research has been partly driven by acknowledged weakness an economics of internal organisation perspective. For example, in the management accounting context, the economics of internal organisation fails to fully conceptualise how decision makers understand decision situations. Political, social and cultural factors are not captured in the economics of internal organisations; however, they are as important as the economic equilibrium (Hopwood and Miller, 1994).

[2] The Victorian state government in Australia is the only shareholder for the State's water corporations, making the case organisations in the present study dependent upon government for resources, and presenting a potentially important form of coercive institutional pressure (see Adams and McNicholas (2007) for a reflection on what this means for environmental reporting).

[3] Multiple occurrences were not counted, as it was the presence or absence of particular themes that was of interest. Thus, a similar approach to "redundant information" was taken to that of Buhr and Freedman (2001) in the sense that multiple occurrences carried no additional information value in terms of this study.

[4] Nine interviewees out of thirteen commented on some form of regulatory requirements for improved environmental performance and four interviewees referred to the sustainability issues in SOO.

[5] Information obtained from the *Atlantic Water* website.

[6] See, Fuenfschilling and Truffer (2014) for a discussion of community, professional, and market challenges faced by state and public water utilities, as the most important decision-making actors in water sector.

[7] Figures have been rounded.